

Amendments to the Claims

The following listing of claims replaces all prior versions of the claims and all prior listings of the claims in the present application. Please add claims 63 -110.

Claims 1-38 (canceled)

Claim 39 (previously presented): A tire for a vehicle, comprising:

a carcass structure;

a belt structure coaxially associated to the carcass structure; and

a tread coaxially extending around the belt structure;

wherein the tire comprises a curvature ratio not greater than 0.1,

wherein the carcass structure comprises a central crown portion and two sidewalls,

wherein each sidewall ends in a bead for anchoring the tire to a rim of a wheel,

wherein the tread comprises an equatorial zone and two shoulder zones,

wherein the equatorial zone extends on both sides of an equatorial plane of the tire,

wherein the two shoulder zones are disposed in axially-opposed positions with respect to the equatorial zone,

wherein the tread further comprises a plurality of transversal grooves,

wherein each transversal groove comprises an equatorial groove portion in the equatorial zone and a shoulder groove portion in one of the shoulder zones,

wherein the equatorial groove portion of each transversal groove has a uniform width;

wherein the shoulder groove portion of each transversal groove has at least a portion having a width smaller than the width of the equatorial groove portion;

wherein the transversal grooves are circumferentially distributed in groups alternately extending from the axially-opposed shoulder zones,

wherein the groups of transversal grooves define a plurality of substantially-continuous tread portions in the equatorial zone,

wherein each substantially-continuous tread portion ends at an equatorial groove portion of a same transversal groove of an axially-opposed group of transversal grooves,

wherein each of the transversal grooves ends at a predetermined distance from the equatorial groove portion of a longest transversal groove of the axially-opposed group of transversal grooves so that all of the transversal grooves end within the equatorial zone, and

wherein each substantially-continuous tread portion comprises a width wider than an adjacent transversal groove.

Claim 40 (previously presented): The tire of claim 39, wherein the equatorial groove portion of at least one of the transversal grooves forms a first angle greater than or equal to 20° and less than or equal to 65° with respect to the equatorial plane of the tire.

Claim 41 (previously presented): The tire of claim 39, wherein at least one of the transversal grooves comprises an equatorial groove portion extending on both sides of the equatorial plane of the tire.

Claim 42 (previously presented): The tire of claim 39, wherein at least one of the transversal grooves comprises an equatorial groove portion extending in a substantially-rectilinear way within a portion of the equatorial zone on one side of the equatorial plane of the tire.

Claim 43 (previously presented): The tire of claim 39, wherein at least one of the transversal grooves comprises an equatorial groove portion extending in a substantially-rectilinear way at least partly within one of the shoulder zones.

Claim 44 (previously presented): The tire of claim 39, wherein in each group of transversal grooves, the transversal grooves comprise equatorial groove portions at least partly substantially parallel to one another.

Claim 45 (previously presented): The tire of claim 39, wherein the equatorial groove portions of the groups of transversal grooves end at a distance less than or equal to 50% of a mean pitch of a tread pattern from the equatorial groove portion of the same transversal groove of the axially-opposed group of transversal grooves.

Claim 46 (previously presented): The tire of claim 39, wherein the equatorial groove portion of each transversal groove is connected to the shoulder groove portion by a substantially-curvilinear intermediate groove portion comprising a radius of curvature greater than or equal to 30 mm and less than or equal to 60 mm.

Claim 47 (previously presented): The tire of claim 39, wherein the shoulder groove portion of at least one transversal groove forms a second angle greater than or equal to 85° and less than or equal to 95° with respect to the equatorial plane of the tire.

Claim 48 (previously presented): The tire of claim 39, wherein the transversal grooves comprise a substantially-constant width greater than or equal to 5 mm and less than or equal to 10 mm along a tread portion substantially corresponding to an area of the tire that contacts the ground when the vehicle travels in a straight line.

Claim 49 (previously presented): The tire of claim 39, wherein the shoulder groove portion of the transversal grooves comprises an end groove portion comprising a width greater than or equal to 40% and less than or equal to 60% of a maximum width of the transversal grooves.

Claim 50 (previously presented): The tire of claim 49, wherein the end groove portion substantially lies within an area of the tire that contacts the ground when the vehicle travels around a curve or experiences drift rolling.

Claim 51 (previously presented): The tire of claim 39, wherein each of the groups of transversal grooves comprises three to seven transversal grooves.

Claim 52 (previously presented): The tire of claim 39, wherein the transversal grooves comprise a depth greater than or equal to 5 mm and less than or equal to 9 mm.

Claim 53 (previously presented): The tire of claim 39, wherein the transversal grooves of each of the groups of transversal grooves are longitudinally staggered with respect to the

transversal grooves of the axially-opposed group of transversal grooves by a distance equal to about 50% of a mean pitch of a tread pattern.

Claim 54 (previously presented): The tire of claim 39, further comprising two longitudinal slots circumferentially extending on opposite sides of the equatorial plane of the tire along the shoulder zones.

Claim 55 (previously presented): The tire of claim 39, further comprising a plurality of transversal notches in the shoulder zones interposed between adjacent transversal grooves;

wherein the transversal notches comprise a depth greater than or equal to 3 mm and less than or equal to 4.5 mm, and

wherein the transversal notches comprise a width greater than or equal to 2 mm and less than or equal to 3.5 mm.

Claim 56 (previously presented): The tire of claim 39, wherein each of the groups of transversal grooves comprises a plurality of transversal grooves comprising a length decreasing along a rolling direction of the tire.

Claim 57 (previously presented): The tire of claim 39, wherein each substantially-continuous tread portion ends at the equatorial groove portion of the longest transversal groove of the axially-opposed group of transversal grooves.

Claim 58 (previously presented): A set of tires, comprising:

two tires for mounting on front wheels of a vehicle; and

two tires for mounting on rear wheels of the vehicle;

wherein the tires for mounting on the front wheels each comprise a first tread,

wherein the tires for mounting on the rear wheels each comprise a second tread,

wherein each tire comprises a curvature ratio not greater than 0.1,

wherein the first and second treads each comprise an equatorial zone and two shoulder zones,

wherein, in the first and second treads, the equatorial zone extends on both sides of an equatorial plane of a respective tire,

wherein, in the first and second treads, the two shoulder zones are disposed in axially-opposed positions relative to the equatorial zone of the respective tire,

wherein the first and second treads each further comprise a plurality of transversal grooves,

wherein, in the first and second treads, each transversal groove comprises an equatorial groove portion in an equatorial zone of the respective tire and a shoulder groove portion in one of the shoulder zones of the respective tire,

wherein the equatorial groove portion of each transversal groove has a uniform width;

wherein the shoulder groove portion of each transversal groove has at least a portion having a width smaller than the width of the equatorial groove portion;

wherein, in the first treads, the transversal grooves are circumferentially distributed in groups alternately extending from axially-opposed shoulder zones of the respective front tire, each group comprising three to five transversal grooves,

wherein, in the second treads, the transversal grooves are circumferentially distributed in groups alternately extending from axially-opposite shoulder zones of the respective rear tire, each group comprising five to seven transversal grooves,

wherein, in the first and second treads, the groups of transversal grooves define a plurality of substantially-continuous tread portions in the equatorial zone of the respective tire,

wherein, in the first and second treads, each substantially-continuous tread portion ends at an equatorial groove portion of a same transversal groove of an axially-opposed group of transversal grooves of the respective tire,

wherein, in the first and second treads, each of the transversal grooves ends at a predetermined distance from the equatorial groove portion of a longest transversal groove of the axially-opposed group of transversal grooves so that all of the transversal grooves end within the equatorial zone of the respective tire.

Claim 59 (previously presented): The set of tires of claim 58, wherein:

the equatorial groove portion of one or more of the transversal grooves of at least one of the first treads forms a third angle substantially equal to 45° with respect to the equatorial plane of the respective front tire, and

the equatorial groove portion of one or more of the transversal grooves of at least one of the second treads forms a fourth angle substantially equal to 30° with respect to the equatorial plane of the respective rear tire.

Claim 60 (previously presented): The set of tires of claim 58, wherein the front tires comprise a chord shorter than a chord of the rear tires.

Claim 61 (previously presented): The set of tires of claim 58, wherein the first treads are provided with groups comprising three transversal grooves, and

wherein the second treads are provided with groups comprising five transversal grooves.

Claim 62 (previously presented): The set of tires of claim 58, wherein the shoulder groove portion of the transversal grooves of at least one of the tires comprises an end groove portion comprising a width greater than or equal to 40% and less than or equal to 60% of a maximum width of the transversal grooves of the at least one of the tires.

Claim 63 (New): A tire for a vehicle, comprising:

a carcass structure;

a belt structure coaxially associated to the carcass structure; and

a tread coaxially extending around the belt structure;

wherein the tire comprises a curvature ratio not greater than 0.1,

wherein the carcass structure comprises a central crown portion and two sidewalls,

wherein each sidewall ends in a bead for anchoring the tire to a rim of a wheel,

wherein the tread comprises an equatorial zone and two shoulder zones,

wherein the equatorial zone extends on both sides of an equatorial plane of the tire,

wherein the two shoulder zones are disposed in axially-opposed positions with respect to the equatorial zone,

wherein the tread further comprises a plurality of transversal grooves,

wherein each transversal groove comprises an equatorial groove portion in the equatorial zone and a shoulder groove portion in one of the shoulder zones,

wherein the equatorial groove portion of each transversal groove has a uniform width;

wherein the transversal grooves are circumferentially distributed in groups alternately extending from the axially-opposed shoulder zones,

wherein the groups of transversal grooves define a plurality of substantially-continuous tread portions in the equatorial zone,

wherein each substantially-continuous tread portion ends at an equatorial groove portion of a same transversal groove of an axially-opposed group of transversal grooves,

wherein each of the transversal grooves ends at a predetermined distance from the equatorial groove portion of a longest transversal groove of the axially-opposed group of transversal grooves so that all of the transversal grooves end within the equatorial zone, and

wherein each substantially-continuous tread portion comprises a width wider than an adjacent transversal groove; and

wherein the substantially-continuous tread portions extend from said axially-opposed shoulder zones towards the equatorial plane of the tire to form a structurally stiff grid of elastomeric material portions fitted in with one another.

Claim 64 (New): The tire of claim 63, wherein the equatorial groove portion of at least one of the transversal grooves forms a first angle greater than or equal to 20° and less than or equal to 65° with respect to the equatorial plane of the tire.

Claim 65 (New): The tire of claim 63, wherein at least one of the transversal grooves comprises an equatorial groove portion extending on both sides of the equatorial plane of the tire.

Claim 66 (New): The tire of claim 63, wherein at least one of the transversal grooves comprises an equatorial groove portion extending in a substantially-rectilinear way within a portion of the equatorial zone on one side of the equatorial plane of the tire.

Claim 67 (New): The tire of claim 63, wherein at least one of the transversal grooves comprises an equatorial groove portion extending in a substantially-rectilinear way at least partly within one of the shoulder zones.

Claim 68 (New): The tire of claim 63, wherein in each group of transversal grooves, the transversal grooves comprise equatorial groove portions at least partly substantially parallel to one another.

Claim 69 (new): The tire of claim 63, wherein the equatorial groove portions of the groups of transversal grooves end at a distance less than or equal to 50% of a mean pitch of a tread pattern from the equatorial groove portion of the same transversal groove of the axially-opposed group of transversal grooves.

Claim 70 (new): The tire of claim 63, wherein the equatorial groove portion of each transversal groove is connected to the shoulder groove portion by a substantially-curvilinear

intermediate groove portion comprising a radius of curvature greater than or equal to 30 mm and less than or equal to 60 mm.

Claim 71 (new): The tire of claim 63, wherein the shoulder groove portion of at least one transversal groove forms a second angle greater than or equal to 85° and less than or equal to 95° with respect to the equatorial plane of the tire.

Claim 72 (new): The tire of claim 63, wherein the transversal grooves comprise a substantially-constant width greater than or equal to 5 mm and less than or equal to 10 mm along a tread portion substantially corresponding to an area of the tire that contacts the ground when the vehicle travels in a straight line.

Claim 73 (new): The tire of claim 63, wherein the shoulder groove portion of the transversal grooves comprises an end groove portion comprising a width greater than or equal to 40% and less than or equal to 60% of a maximum width of the transversal grooves.

Claim 74 (new): The tire of claim 63, wherein the end groove portion substantially lies within an area of the tire that contacts the ground when the vehicle travels around a curve or experiences drift rolling.

Claim 75 (new): The tire of claim 63, wherein each of the groups of transversal grooves comprises three to seven transversal grooves.

Claim 76 (new): The tire of claim 63, wherein the transversal grooves comprise a depth greater than or equal to 5 mm and less than or equal to 9 mm.

Claim 77 (new): The tire of claim 63, wherein the transversal grooves of each of the groups of transversal grooves are longitudinally staggered with respect to the transversal grooves of the axially-opposed group of transversal grooves by a distance equal to about 50% of a mean pitch of a tread pattern.

Claim 78 (new): The tire of claim 63, further comprising two longitudinal slots circumferentially extending on opposite sides of the equatorial plane of the tire along the shoulder zones.

Claim 79 (new): The tire of claim 63, further comprising a plurality of transversal notches in the shoulder zones interposed between adjacent transversal grooves;

wherein the transversal notches comprise a depth greater than or equal to 3 mm and less than or equal to 4.5 mm, and

wherein the transversal notches comprise a width greater than or equal to 2 mm and less than or equal to 3.5 mm.

Claim 80 (new): The tire of claim 63, wherein each of the groups of transversal grooves comprises a plurality of transversal grooves comprising a length decreasing along a rolling direction of the tire.

Claim 81 (new): The tire of claim 63, wherein each substantially-continuous tread portion ends at the equatorial groove portion of the longest transversal groove of the axially-opposed group of transversal grooves.

Claim 82 (new): A set of tires, comprising:

two tires for mounting on front wheels of a vehicle; and

two tires for mounting on rear wheels of the vehicle;

wherein the tires for mounting on the front wheels each comprise a first tread,

wherein the tires for mounting on the rear wheels each comprise a second tread,

wherein each tire comprises a curvature ratio not greater than 0.1,

wherein the first and second treads each comprise an equatorial zone and two shoulder zones,

wherein, in the first and second treads, the equatorial zone extends on both sides of an equatorial plane of a respective tire,

wherein, in the first and second treads, the two shoulder zones are disposed in axially-opposed positions relative to the equatorial zone of the respective tire,

wherein the first and second treads each further comprise a plurality of transversal grooves,

wherein, in the first and second treads, each transversal groove comprises an equatorial groove portion in an equatorial zone of the respective tire and a shoulder groove portion in one of the shoulder zones of the respective tire,

wherein the equatorial groove portion of each transversal groove has a uniform width;

wherein, in the first treads, the transversal grooves are circumferentially distributed in groups alternately extending from axially-opposed shoulder zones of the respective front tire, each group comprising three to five transversal grooves,

wherein, in the second treads, the transversal grooves are circumferentially distributed in groups alternately extending from axially-opposite shoulder zones of the respective rear tire, each group comprising five to seven transversal grooves,

wherein, in the first and second treads, the groups of transversal grooves define a plurality of substantially-continuous tread portions in the equatorial zone of the respective tire,

wherein, in the first and second treads, each substantially-continuous tread portion ends at an equatorial groove portion of a same transversal groove of an axially-opposed group of transversal grooves of the respective tire,

wherein, in the first and second treads, each of the transversal grooves ends at a predetermined distance from the equatorial groove portion of a longest transversal groove of the axially-opposed group of transversal grooves so that all of the transversal grooves end within the equatorial zone of the respective tire,

wherein the substantially-continuous tread portions extend from said axially-opposed shoulder zones towards the equatorial plane of the tire to form a structurally stiff grid of elastomeric material portions fitted in with one another.

Claim 83 (new): The set of tires of claim 82, wherein:

the equatorial groove portion of one or more of the transversal grooves of at least one of the first treads forms a third angle substantially equal to 45° with respect to the equatorial plane of the respective front tire, and

the equatorial groove portion of one or more of the transversal grooves of at least one of the second treads forms a fourth angle substantially equal to 30° with respect to the equatorial plane of the respective rear tire.

Claim 84 (new): The set of tires of claim 82, wherein the front tires comprise a chord shorter than a chord of the rear tires.

Claim 85 (new): The set of tires of claim 82, wherein the first treads are provided with groups comprising three transversal grooves, and
wherein the second treads are provided with groups comprising five transversal grooves.

Claim 86 (new): The set of tires of claim 82, wherein the shoulder groove portion of the transversal grooves of at least one of the tires comprises an end groove portion comprising a width greater than or equal to 40% and less than or equal to 60% of a maximum width of the transversal grooves of the at least one of the tires.

Claim 87 (new): A tire for a vehicle, comprising:
a carcass structure;
a belt structure coaxially associated to the carcass structure; and
a tread coaxially extending around the belt structure;
wherein the tire comprises a curvature ratio not greater than 0.1,
wherein the carcass structure comprises a central crown portion and two sidewalls,
wherein each sidewall ends in a bead for anchoring the tire to a rim of a wheel,

wherein the tread comprises an equatorial zone and two shoulder zones,

wherein the equatorial zone extends on both sides of an equatorial plane of the tire,

wherein the two shoulder zones are disposed in axially-opposed positions with respect to the equatorial zone,

wherein the tread further comprises a plurality of transversal grooves,

wherein each transversal groove comprises an equatorial groove portion in the equatorial zone and a shoulder groove portion in one of the shoulder zones,

wherein the equatorial groove portion of each transversal groove has a uniform width;

wherein the transversal grooves are circumferentially distributed in groups alternately extending from the axially-opposed shoulder zones,

wherein the groups of transversal grooves define a plurality of substantially-continuous tread portions in the equatorial zone,

wherein each substantially-continuous tread portion ends at an equatorial groove portion of a same transversal groove of an axially-opposed group of transversal grooves,

wherein each of the transversal grooves ends at a predetermined distance from the equatorial groove portion of a longest transversal groove of the axially-opposed group of transversal grooves so that all of the transversal grooves end within the equatorial zone; and

wherein the substantially-continuous tread portions are provided about an axis such that during tire rolling, stresses imparted to the substantially-continuous tread portions are discharged along the axis.

Claim 88 (new): The tire of claim 87, wherein the equatorial groove portion of at least one of the transversal grooves forms a first angle greater than or equal to 20° and less than or equal to 65° with respect to the equatorial plane of the tire.

Claim 89 (new): The tire of claim 87, wherein at least one of the transversal grooves comprises an equatorial groove portion extending on both sides of the equatorial plane of the tire.

Claim 90 (new): The tire of claim 87, wherein at least one of the transversal grooves comprises an equatorial groove portion extending in a substantially-rectilinear way within a portion of the equatorial zone on one side of the equatorial plane of the tire.

Claim 91 (new): The tire of claim 87, wherein at least one of the transversal grooves comprises an equatorial groove portion extending in a substantially-rectilinear way at least partly within one of the shoulder zones.

Claim 92 (new): The tire of claim 87, wherein in each group of transversal grooves, the transversal grooves comprise equatorial groove portions at least partly substantially parallel to one another.

Claim 93 (new): The tire of claim 87, wherein the equatorial groove portions of the groups of transversal grooves end at a distance less than or equal to 50% of a mean pitch of a tread pattern from the equatorial groove portion of the same transversal groove of the axially-opposed group of transversal grooves.

Claim 94 (new): The tire of claim 87, wherein the equatorial groove portion of each transversal groove is connected to the shoulder groove portion by a substantially-curvilinear intermediate groove portion comprising a radius of curvature greater than or equal to 30 mm and less than or equal to 60 mm.

Claim 95 (new): The tire of claim 87, wherein the shoulder groove portion of at least one transversal groove forms a second angle greater than or equal to 85° and less than or equal to 95° with respect to the equatorial plane of the tire.

Claim 96 (new): The tire of claim 87, wherein the transversal grooves comprise a substantially-constant width greater than or equal to 5 mm and less than or equal to 10 mm along a tread portion substantially corresponding to an area of the tire that contacts the ground when the vehicle travels in a straight line.

Claim 97 (new): The tire of claim 87, wherein the shoulder groove portion of the transversal grooves comprises an end groove portion comprising a width greater than or equal to 40% and less than or equal to 60% of a maximum width of the transversal grooves.

Claim 98 (new): The tire of claim 49, wherein the end groove portion substantially lies within an area of the tire that contacts the ground when the vehicle travels around a curve or experiences drift rolling.

Claim 99 (new): The tire of claim 87, wherein each of the groups of transversal grooves comprises three to seven transversal grooves.

Claim 100 (new): The tire of claim 87, wherein the transversal grooves comprise a depth greater than or equal to 5 mm and less than or equal to 9 mm.

Claim 101 (new): The tire of claim 87, wherein the transversal grooves of each of the groups of transversal grooves are longitudinally staggered with respect to the transversal grooves of the axially-opposed group of transversal grooves by a distance equal to about 50% of a mean pitch of a tread pattern.

Claim 102 (new): The tire of claim 87, further comprising two longitudinal slots circumferentially extending on opposite sides of the equatorial plane of the tire along the shoulder zones.

Claim 103 (new): The tire of claim 87, further comprising a plurality of transversal notches in the shoulder zones interposed between adjacent transversal grooves;

wherein the transversal notches comprise a depth greater than or equal to 3 mm and less than or equal to 4.5 mm, and

wherein the transversal notches comprise a width greater than or equal to 2 mm and less than or equal to 3.5 mm.

Claim 104 (new): The tire of claim 87, wherein each of the groups of transversal grooves comprises a plurality of transversal grooves comprising a length decreasing along a rolling direction of the tire.

Claim 105 (new): The tire of claim 87, wherein each substantially-continuous tread portion ends at the equatorial groove portion of the longest transversal groove of the axially-opposed group of transversal grooves.

Claim 106 (new): A set of tires, comprising:
two tires for mounting on front wheels of a vehicle; and
two tires for mounting on rear wheels of the vehicle;
wherein the tires for mounting on the front wheels each comprise a first tread,
wherein the tires for mounting on the rear wheels each comprise a second tread,
wherein each tire comprises a curvature ratio not greater than 0.1,
wherein the first and second treads each comprise an equatorial zone and two shoulder zones,
wherein, in the first and second treads, the equatorial zone extends on both sides of an equatorial plane of a respective tire,
wherein, in the first and second treads, the two shoulder zones are disposed in axially-opposed positions relative to the equatorial zone of the respective tire,
wherein the first and second treads each further comprise a plurality of transversal grooves,

wherein, in the first and second treads, each transversal groove comprises an equatorial groove portion in an equatorial zone of the respective tire and a shoulder groove portion in one of the shoulder zones of the respective tire,

wherein the equatorial groove portion of each transversal groove has a uniform width;

wherein, in the first treads, the transversal grooves are circumferentially distributed in groups alternately extending from axially-opposed shoulder zones of the respective front tire, each group comprising three to five transversal grooves,

wherein, in the second treads, the transversal grooves are circumferentially distributed in groups alternately extending from axially-opposite shoulder zones of the respective rear tire, each group comprising five to seven transversal grooves,

wherein, in the first and second treads, the groups of transversal grooves define a plurality of substantially-continuous tread portions in the equatorial zone of the respective tire,

wherein, in the first and second treads, each substantially-continuous tread portion ends at an equatorial groove portion of a same transversal groove of an axially-opposed group of transversal grooves of the respective tire,

wherein, in the first and second treads, each of the transversal grooves ends at a predetermined distance from the equatorial groove portion of a longest transversal groove of the axially-opposed group of transversal grooves so that all of the transversal grooves end within the equatorial zone of the respective tire; and

wherein the substantially-continuous tread portions are provided about an axis such that during tire rolling, stresses imparted to the substantially-continuous tread portions are discharged along the axis.

Claim 107 (new): The set of tires of claim 106, wherein:

the equatorial groove portion of one or more of the transversal grooves of at least one of the first treads forms a third angle substantially equal to 45° with respect to the equatorial plane of the respective front tire, and

the equatorial groove portion of one or more of the transversal grooves of at least one of the second treads forms a fourth angle substantially equal to 30° with respect to the equatorial plane of the respective rear tire.

Claim 108 (new): The set of tires of claim 106, wherein the front tires comprise a chord shorter than a chord of the rear tires.

Claim 109 (new): The set of tires of claim 106, wherein the first treads are provided with groups comprising three transversal grooves, and

wherein the second treads are provided with groups comprising five transversal grooves.

Claim 110 (new): The set of tires of claim 106, wherein the shoulder groove portion of the transversal grooves of at least one of the tires comprises an end groove portion comprising a width greater than or equal to 40% and less than or equal to 60% of a maximum width of the transversal grooves of the at least one of the tires.